Kyle B. Rinehart
Klarquist Sparkman et al
121 SW Salmon Street
Suite 1600
Portland, Oregon 97204
Telephone: 503/226-7391

Our Ref. No. 1011-67363
For: STRUCTURED ALGORITHMIC PROGRAMMING LANGUAGE APPROACH TO SYSTEM...
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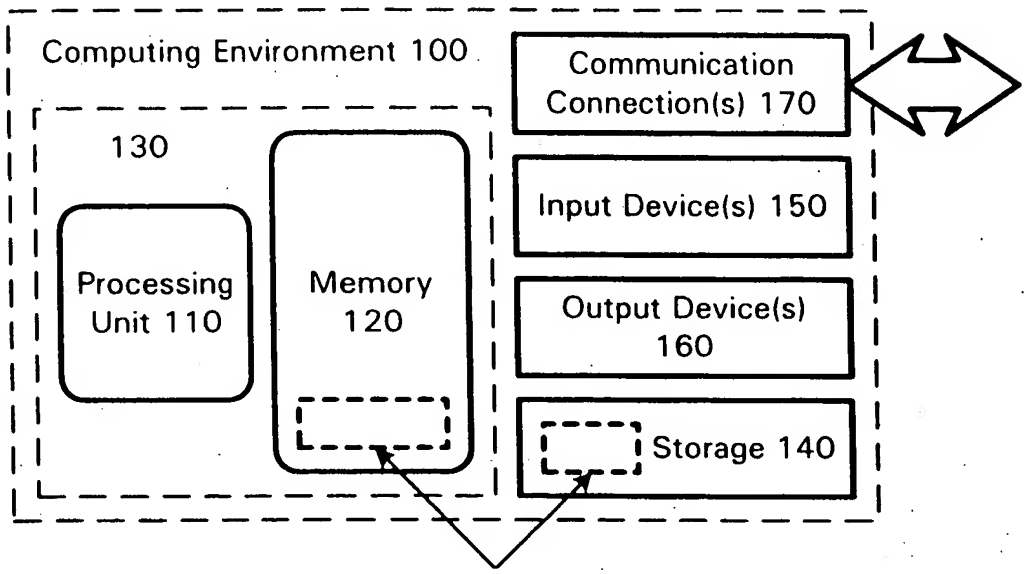
Figure 1



Design Tool Software 180 With Structured Programming Language Approach

Figure 2

200

```
int gcd(int input1, int input2) {
        if ( input1 == 0 || input2 == 0 )
                return 0;
        while ( input1 != input2 ) {
                if ( input1 < input2 )
                        input2 -= input1;
                else
                        input1 -= input2;
        }
        return input1;
}
```

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Figure 10

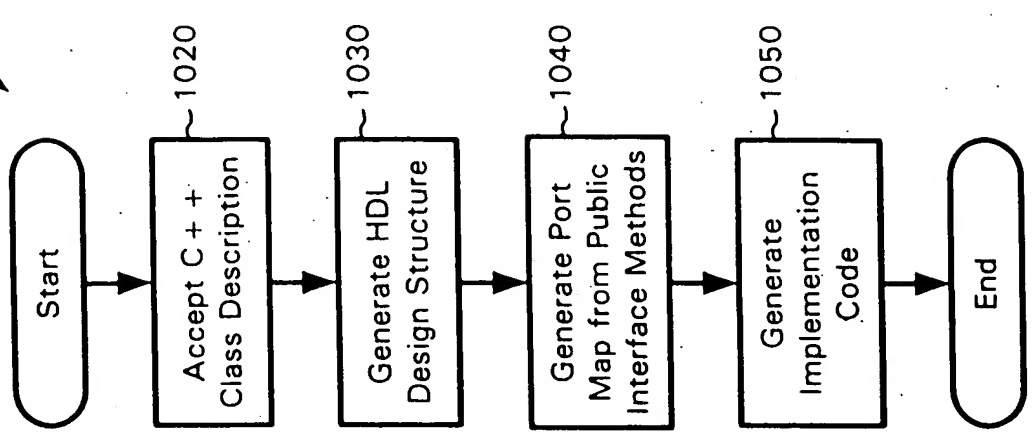

Figure 5

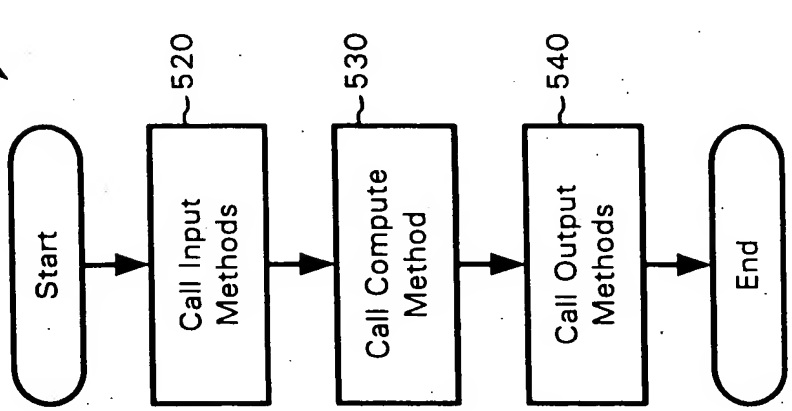

Figure 3

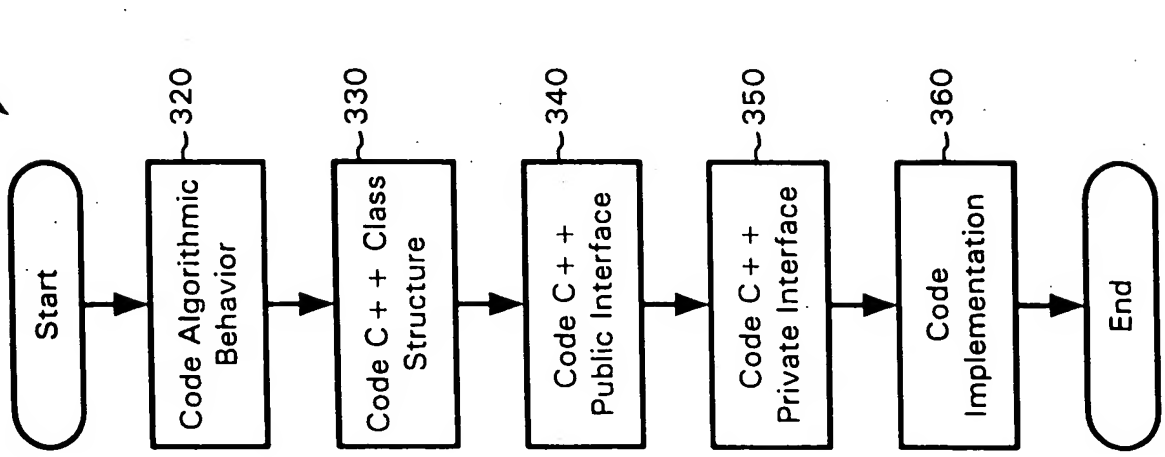

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Figure 4

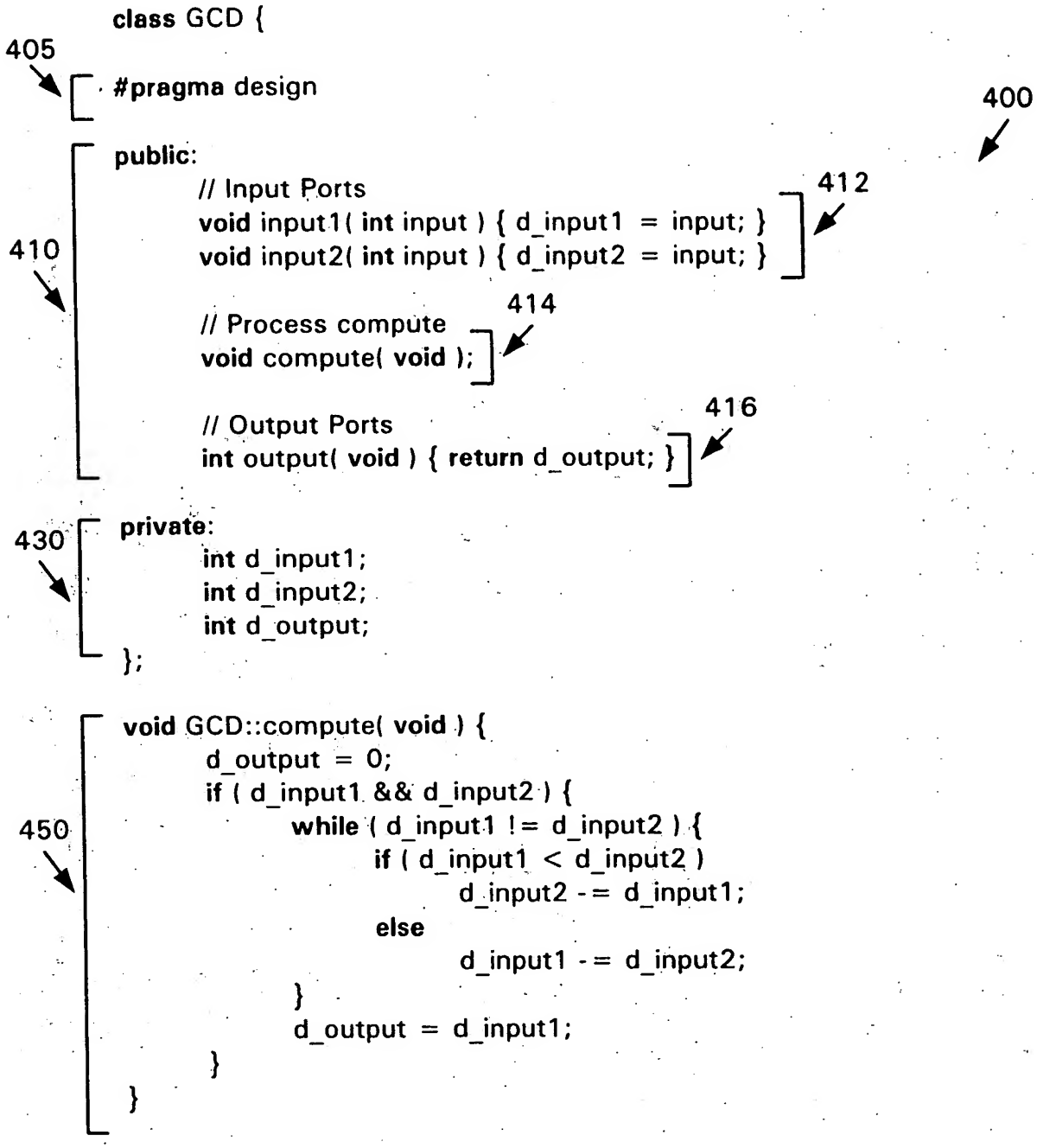

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Figure 6

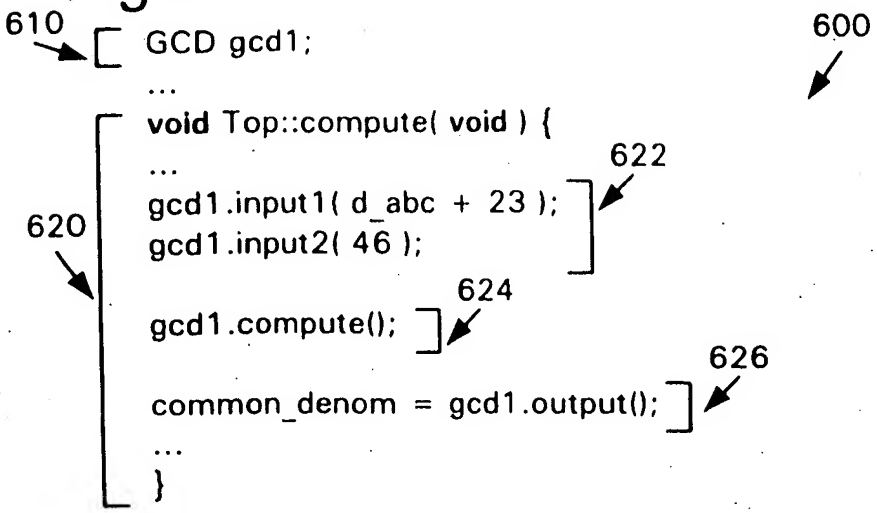
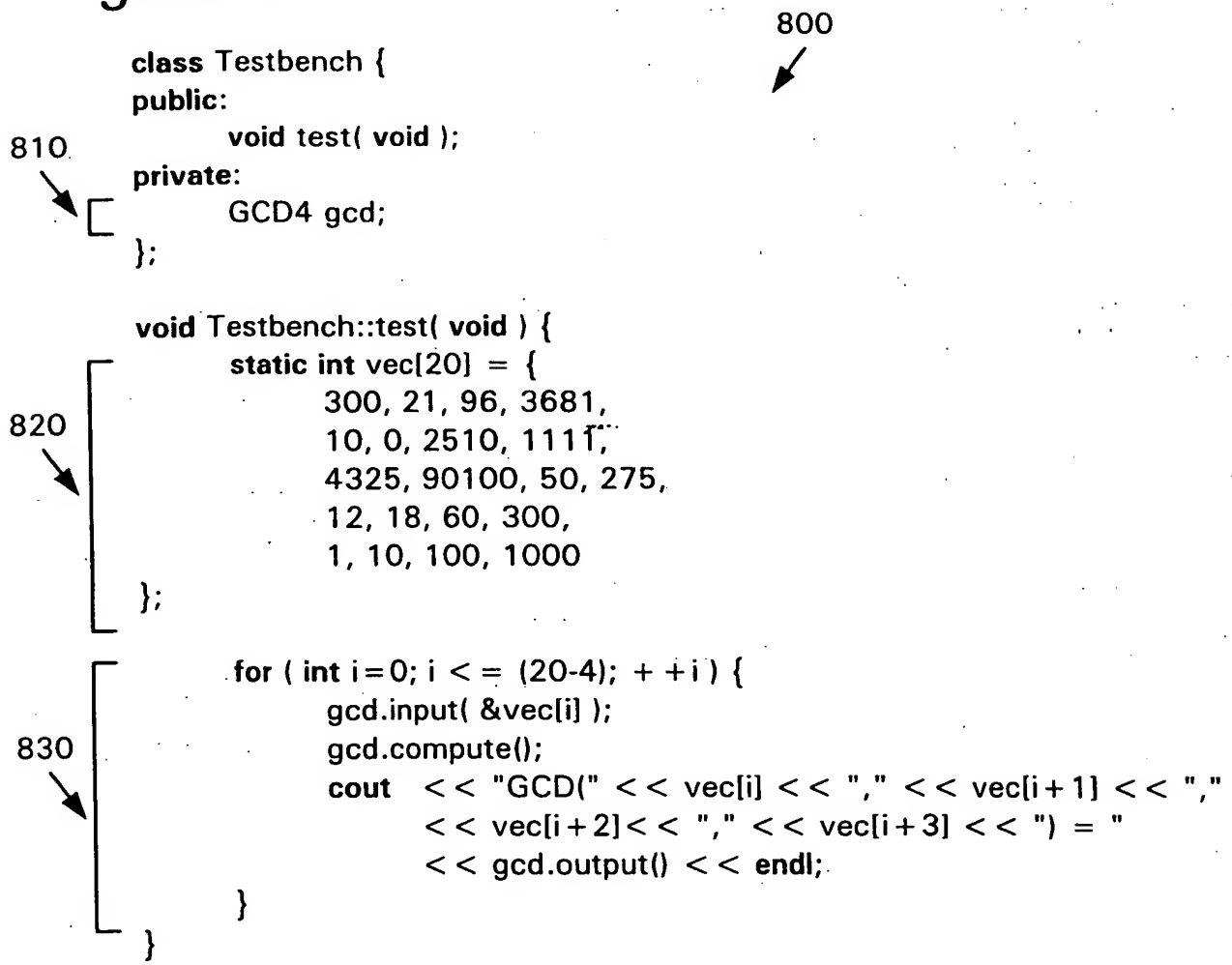


Figure 8



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Klarquist Sparkman et al
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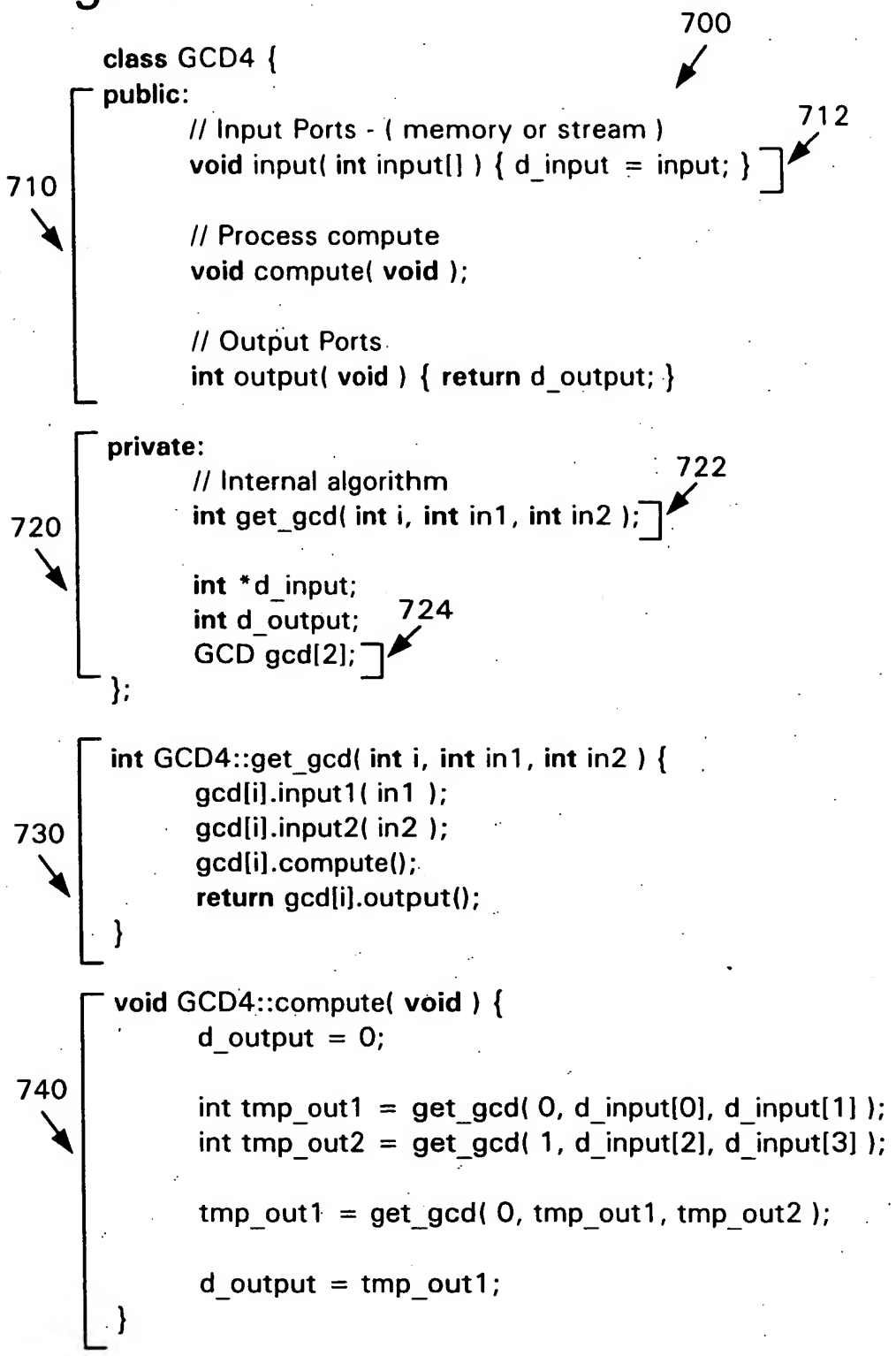
Figure 7



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Klarquist Sparkman et al
121 SW Salmon Street
Suite 1600
Portland, Oregon 97204
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Figure 9

900

```
struct bitvector4 {
#pragma builtin
        signed int val : 4;
        bitvector4 () {}
        bitvector4 ( signed int n ) { val = n; }
        signed int operator = ( signed int n ) {val = n; return val; }
        operator signed int () const { return val; }
        signed int operator -= ( signed int n ) { val -= n; return val; }
        signed int operator += ( signed int n ) { val += n; return val; }
        signed int operator *= ( signed int n ) { val *= n; return val; }
        signed int operator /= ( signed int n ) { val /= n; return val; }
        signed int operator ++ () { return ++val; }
        signed int operator ++ ( int ) {
                bitvector4 tmp = val;
                ++val;
                return tmp;
        }
        signed int operator -- () { return --val; }
        signed int operator -- ( int ) {
                bitvector4 tmp = val;
                --val;
                return tmp;
        }
};
```

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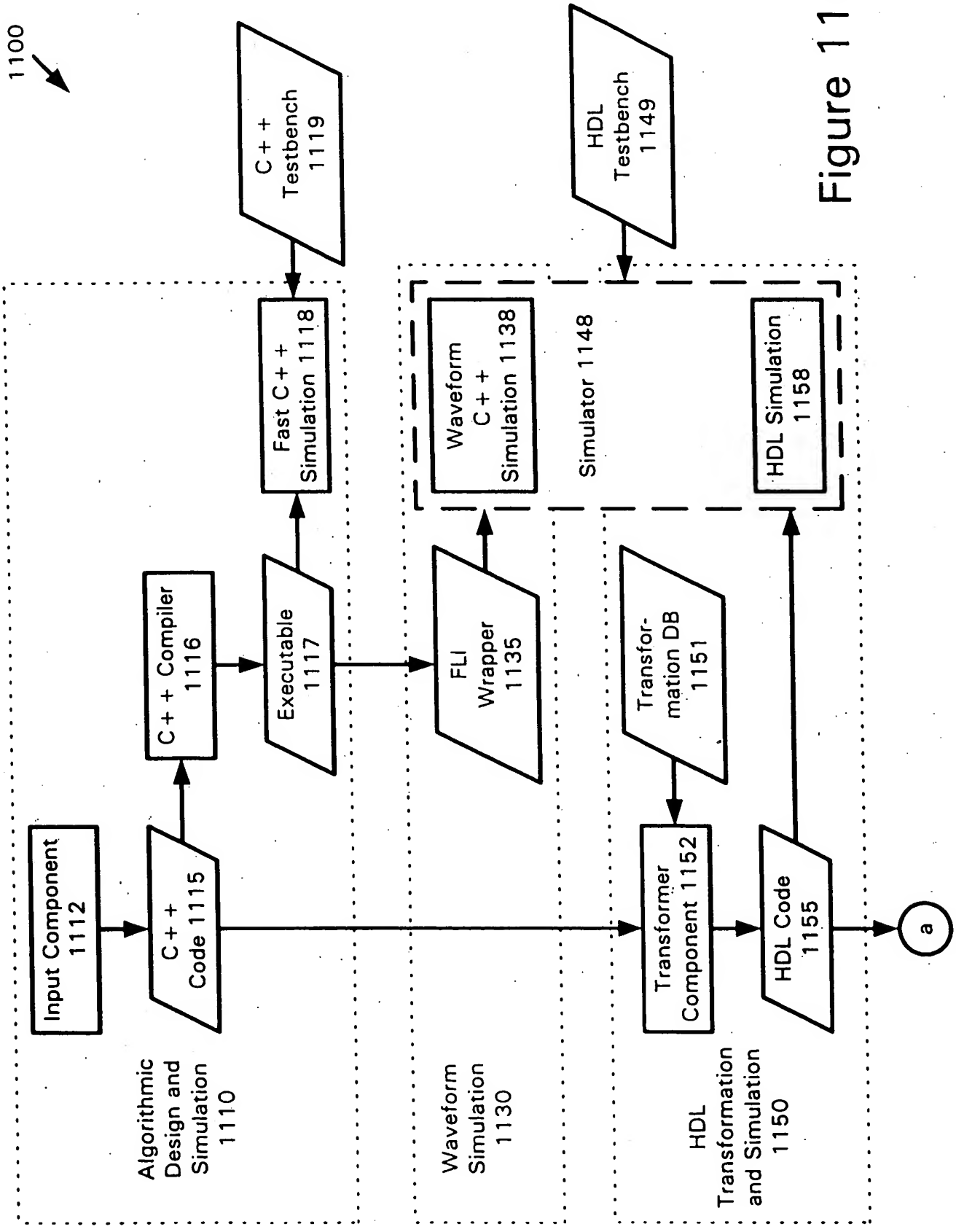

Figure 11a

Kyle B. Rinehart
Klarquist Sparkman et al
121 SW Salmon Street
Suite 1600
Portland, Oregon 97204
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Figure 11b

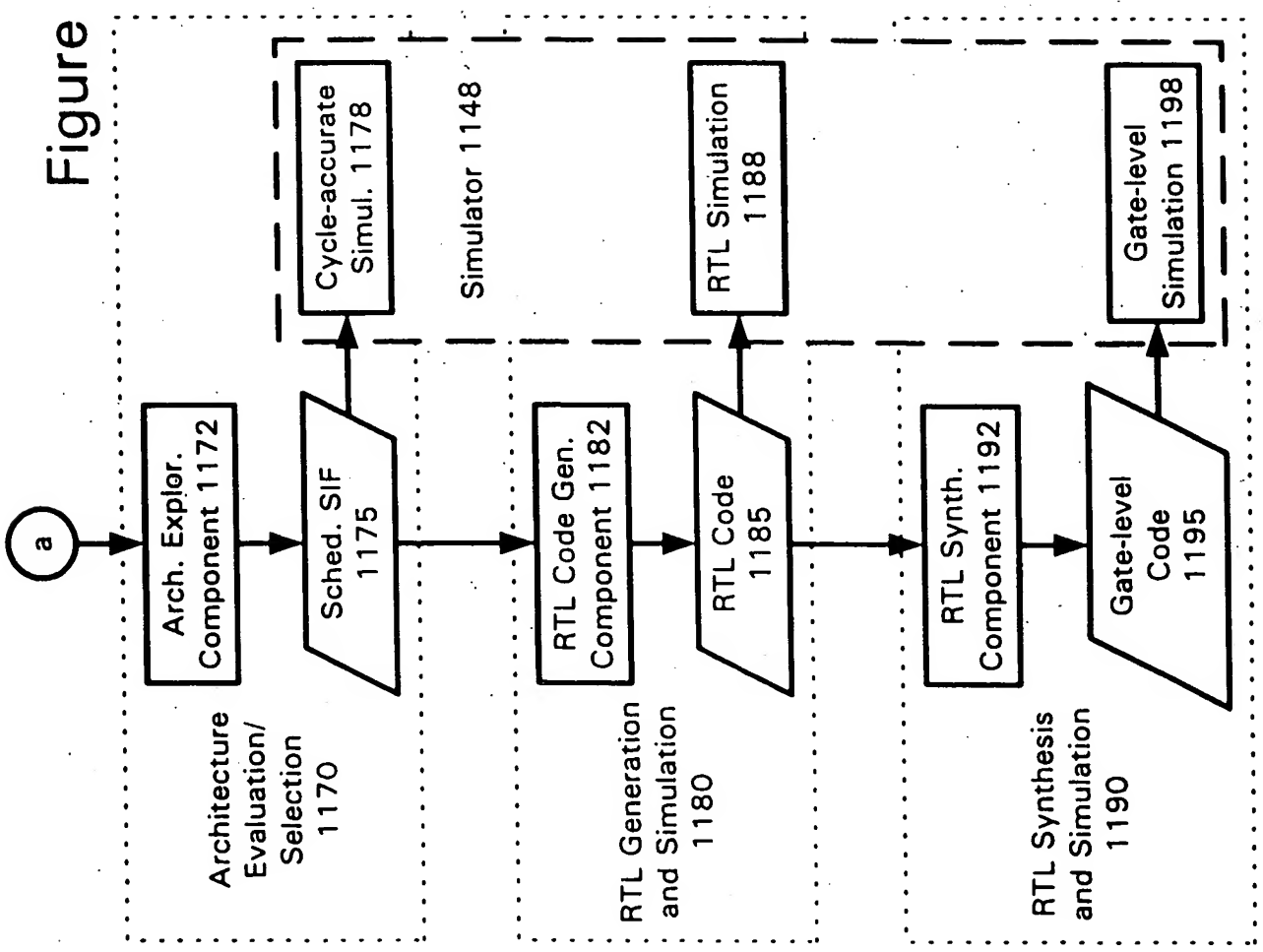

Figure 12

1200

Benchmark	GCD		FIR		5th Order Filter		JPEG	
original C++ (C++ testbench)	25 lines	0.67 seconds	68 lines	0.75 seconds	77 lines	0.95 seconds	257 lines	0.29 seconds
original C++ w/FLI (VHDL testbench)	127 lines	11.8 seconds	221 lines	2.5 seconds	230 lines	2.88 seconds	415 lines	38.9 seconds
VHDL after transformation	63 lines	11.6 seconds	117 lines	21.5 seconds	137 lines	2.4 seconds	556 lines	50.6 seconds
VHDL after scheduling (cycle accurate)	78 lines	37.7 seconds	305 lines	42.9 seconds	173 lines	3.1 seconds	1301 lines	87.4 seconds
VHDL structural at RTL level	353 lines	210.6 seconds	1068 lines	198.9 seconds	507 lines	56.9 seconds	7123 lines	836 seconds
VHDL structural at gate level	1277 lines	872.0 seconds	6234 lines	3544 seconds	2767 lines	1925 seconds	53219 lines	3 hours

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